CLAIMS

1. A method for producing fullerenes in which a hydrocarbon-containing material gas and an oxygen-containing gas are discharged from a discharge portion provided in a fullerene reactor into the fullerene reactor and burned, characterized in that:
an average discharge rate of the hydrocarbon-containing material gas and the oxygen-containing gas discharged from the discharge portion into the fullerene reactor is higher than 0.75 m/s but not higher than 10 m/s.

2. The method for producing fullerenes according to claim 1,
wherein the average discharge rate of the hydrocarbon-containing material gas and the oxygen-containing gas discharged from the discharge portion is in a range of 1 m/s to 6 m/s.

3. The method for producing fullerenes according to claim 1 or 2,
wherein (V·P) is in a range of 30 to 1000, with V m/s being the average discharge rate of the hydrocarbon-containing material gas and the oxygen-containing gas and P torr being a pressure in the fullerene reactor.

4. The method for producing fullerenes according to one of claims 1 to 3,
wherein a gas containing a soot-like material introduced into a soot-like material recovery device from the fullerene reactor has been cooled to be in a temperature range of 200°C to 700°C.

5. The method for producing fullerenes according to claim 4,
wherein the gas containing the soot-like material exhausted from the fullerene reactor is cooled at a cooling rate of 1000 °C/s or higher until reaching the recovery device.

6. The method for producing fullerenes according to claim 4 or 5,
wherein the gas containing the soot-like material exhausted from the fullerene reactor is cooled by forming a swirling flow in a pipe with a periphery cooled by a cooling medium.

7. The method for producing fullerenes according to one of claims 1 to 6, wherein an elemental ratio of carbon in the hydrocarbon-containing material gas with respect to oxygen in the oxygen-containing gas is in a range of 1.00 to 1.56 at a time of burning of the hydrocarbon-containing material gas.

8. The method for producing fullerenes according to one of claims 1 to 7, wherein the oxygen-containing gas has an oxygen concentration of 99% or more.

9. The method for producing fullerenes according to one of claims 1 to 8, wherein the hydrocarbon-containing material gas is preheated before being discharged from the discharge portion into the fullerene reactor.

10. The method for producing fullerenes according to one of claims 1 to 9, wherein the oxygen-containing gas is preheated before being discharged from the discharge portion into the fullerene reactor.

11. The method for producing fullerenes according to one of claims 1 to 10, wherein a burner with the discharge portion is provided at an upper portion of the fullerene reactor, and an exhaust portion for exhausting the gas containing the soot-like material produced in the fullerene reactor is provided at a lower portion of the fullerene reactor.

12. The method for producing fullerenes according to one of claims 1 to 11, wherein a fullerene content in the soot-like material produced in the fullerene reactor is more than 7% by mass but not more than 50% by mass.